

SWBAT: contrast natural frequency and forced vibration

Jan 4-7:20 AM

Concept Sheet

~ 7 rows when we're done...

We'll fill in two terms (rows) today.

Concept	Meaning	Sym-bol	Units	Picture
FREQUENCY	HOW MANY PER UNIT OF TIME $\text{FREQ} = \frac{\#}{\text{TIME}}$	$f$ $f = \frac{1}{T}$	hertz $\text{Hz} = \frac{1}{\text{sec}}$	
PERIOD	HOW MUCH TIME FOR ONE. PERIOD = $\frac{\text{TIME}}{\#}$	$T$ $T = \frac{1}{f}$	seconds sec.	
TRANSVERSE	WHEN THE MEDIUM VIBRATES ACROSS THE DIRECTION THE WAVE TRAVELS.			
LONGITUDINAL	WHEN THE MEDIUM VIBRATES ALONG THE DIRECTION THE WAVE TRAVELS.			
AMPLITUDE	HOW FAR FROM THE MIDDLE.	$A$	meters m	
WAVELENGTH	HOW FAR FOR ONE "BACK & FORTH"	$\lambda$	meters m	
WAVE SPEED	DISTANCE OF A WAVE TIME OF A WAVE	$v$	$\frac{\text{meters}}{\text{second}}$ m/s	

Feb 18-6:50 AM

# Welcome!!!

SECA Physics  
Monday 27 April 2015

H. Leslie Grebe

- \* Pick up:
- long sheet
  - slip of paper (for later)

## Opening Questions:

What makes different things sound different? <sup>VIBRATIONS</sup>

<sup>WAVELENGTH</sup> - HOW FAST - PITCH  
<sup>KIND OF WAVE?</sup> <sup>BIG/SMALL</sup>  
 COMBINE? MATERIAL SIZE/WEIGHT centering

Sep 7-7:04 AM

## Tap things and make observations about sounds:

How are they different?

- <sup>AT LEAST 5</sup>
- Make some notes on your own <sup>WORDS</sup>
  - Discuss thoughts with others at your table
  - Share with whole class

THUD      RINGS      ECHO-Y  
 DULL      HOLLOW/SOLID PITCH H/LO  
 SOFT/LOUD THUMP      METALLIC  
                                  RUBBERY

Apr 21-7:45 AM

## Pennies:

Sort them by sound? DULL / RING

Observations? Theories?

1982 95% Cu / Zn CORE  
5% Zn / Cu COATING

Apr 12-7:13 AM

## Natural Frequency:

The frequency an *elastic* object vibrates most easily

Harder objects are more elastic

Tuning Forks -- labeled with their natural frequency

Strike only with erasers!

- listen "DING" → RINGS
- touch it gently to your cheek
- touch it to the table

Observations?

Hz  
480 B  
512 C

Apr 21-9:24 AM

## Acoustic and Electric Guitar

ACUSTIC  
Raise your hand if you can hear the note.

TUNING FORK

ON GUITAR

YES

ELECTRIC

(IN AIR)

VS. NOT ON GUITAR

NO

GUITAR BODY  
= FORCED VIBRATIONS

Forced Vibrations: When an object is being forced to vibrate at another object's natural frequency

Which will vibrate longer?

May 3-7:50 AM

## Daily 3 Questions

- \* Every day except test/project days
- \* 3 Questions on the topics of the day
- \* Main source of daily points
- \* I am happy to give credit when I have no concerns about someone giving or getting help with the answers.

CP: Standing Wave  
worksheet was due!

You can't get your points if you don't have your NAME!!!

Name	Period
1.	
2.	
3.	

Sep 9-7:32 AM

- 1) The frequency an elastic object vibrates most easily.
- ☒ A) Natural Frequency
  - ☐ B) Forced Vibration
  - ☐ C) Interference
- 2) When an object is forced to vibrate at a different objects natural frequency
- ☐ A) Natural Frequency
  - ☒ B) Forced Vibration
  - ☐ C) Interference
- 3) The label on a tuning fork tells you its
- ☒ A) Natural Frequency
  - ☐ B) Forced Vibration
  - ☐ C) Interference

Apr 25-7:25 AM